SECTION 4. DOCUMENTATION, LOGISTICS, WARRANTY, CERTIFICATION TERMS AND IN–USE PERFORMANCE REQUIREMENTS

4.1 GENERAL

The following items shall be included with each BAR-97 submitted for certification or delivered to stations:

a) Instruction manual, securely held in a binder (or other suitable container) made of a material that is resistant to most petroleum-based products used in the garage environment.
b) A copy of the warranty and annual service agreement. (See '4.3)
c) A copy of the disclosure statement. (See '4.4)
d) For the analyzer, at least four extra sets of particulate filter elements.
e) Special adjustment tools if needed for calibration of the analyzer, the dynamometer, the fuel cap tester and any other internal/integral device.
f) Attached placard denoting operating procedures, gas checking/calibrating steps, maintenance items and local service contact with phone number and address.

4.2 INSTRUCTION MANUAL

The instruction manual accompanying each BAR-97 shall contain the following minimum information:

a) Background information describing how vehicular emissions are formed during the combustion process, the general types of controls that are used on vehicles and what negative health impacts can result from vehicle emissions;
b) Functional diagrams (mechanical and electrical);
c) Accessories and options (included and/or available);
d) Model number and identification markings and locations;
e) Maintenance procedures and frequencies recommended by the manufacturer. The services that should be performed only by the manufacturer shall be clearly identified;
f) Gas calibration/leak check procedures as well as calibration procedures for the dynamometer, the fuel cap tester and any other internal/integral devices;
g) Brief description with a subject index of the inspection/test procedures as they pertain to the EIS prompts;
h) Brief description of emission analyzer and dynamometer operating principles (including the significance of inertia, horsepower and torque);
i) A listing and easily understood explanation of warranty provisions (including the extended warranty and service contract), to be signed by a company representative and the purchaser. Information provided shall include a listing of warranty repair stations by name, address and phone number; and

j) Name, address and phone number of the manufacturer's representative in charge of sales and service personnel for the company in California. In addition, information shall be provided indicating the name, address and phone number for the company's Vice President of service (or equivalent) who reports directly to the Chief Executive Officer. The names of these representatives shall be verified, or updated as needed, every time a manufacturer service technician visits a station.

4.3 BAR-97 WARRANTY AND SERVICE MAINTENANCE CONTRACT

Warranty or service contract work shall include repair and or replacement as necessary to restore EIS to a fully functional condition.

a) The cost of the BAR-97 shall include a one-year, transferable warranty covering parts and labor. Also, at the time of original sale, the manufacturer shall offer an optional additional two or three-year warranty to be included in the cost of the EIS.

All EIS upgrades or software updates shall be covered by at least a one-year warranty.

Warranty provisions protecting the interest of the buyer shall include:

1. Location, phone number and address of the repair centers throughout the state. These shall be an adequate number of qualified repair technicians and an adequate number of repair locations conveniently located to efficiently and promptly meet statewide service needs. The response time established by the manufacturer may be longer for a lower purchase price or shorter if the price is higher. All response time and cost provisions shall be clearly indicated in the warranty provisions.

2. Name of the manufacturer's representative closest to each franchised service center - if not a factory service center.

3. Coverage of at least all of the hardware and software contained inside the tamper resistant analyzer cabinet, the computer keyboard and monitor, the dynamometer and the fuel cap tester. A description of specific parts and labor covered by the provisions of the warranty shall be permanently provided to the purchaser. In addition, the warranty shall itemize the parts and labor which are not covered by the warranty. (It is not necessary for the manufacturers to warranty any parts or equipment not provided by them.)

To ensure that purchasers are properly notified regarding the cost and provisions of the warranty, the BAR-97 shall not be delivered until a copy of the warranty has been signed by the purchaser and a company representative. Service response time and loaner provisions shall be initialed by the purchaser. A copy of the signed warranty shall be provided to the purchaser and a copy filed by the company.

b) The manufacturer shall make available an annual service contract covering, as a minimum, all of the items located inside the secured area(s) of the analyzer, the dynamometer and the fuel cap tester.

Service contract provisions protecting the interests of the buyer shall include:

1. The necessary level of service to ensure that the BAR-97 functions properly within the operating conditions listed in this specification. Such items as filters, disk drive cleaning and alignment, analyzer bench service, and pump maintenance are typical service maintenance items.

2. The manufacturer is responsible for specifying the frequency of performance.

3. The manufacturer shall include in the annual service/maintenance contract the cost of making the necessary software changes. This covers software changes to correct outstanding and / or non-compliant issues.

4. The manufacturer or his sales representative must notify the BAR of the cost for this service as a condition of certification and include projected increases.

5. The information in Items 1 - 4 above must also be made available to the potential buyer of a BAR-97 before purchase or lease.

c) The following provisions apply to both the warranty and service maintenance contract:

1. Any change to the warranty or service contract must be approved by the BAR.

2. If the manufacturer fails to provide the purchaser with a warranty and warranty description, and the purchaser files a written complaint with the BAR, the manufacturer shall refund to the purchaser the depreciated value of the BAR-97 based on straight line depreciation over 5 years.

3. The BAR-97 owner shall be provided a cost estimate prior to the performance of any service or maintenance unless the work is covered by the warranty or service contract. Regardless of whether or not the work is covered by the warranty or service contract, the owner shall be provided a detailed description of the work performed when the job is completed. In addition, the manufacturer shall include a toll-free telephone number for the owner of the analyzer to call if he/she wants to complain about the work performed, the courtesy or competency of the manufacturer's technician or any other aspect of the warranty or service contract.

4. Manufacturers shall provide a station with a loaner BAR-97 if the station's EIS is out of service for more than three days. Manufacturers shall have on hand sufficient loaners to satisfy these service needs, based on a thorough review of their BAR-90 history. Loaner units shall be calibrated, provided with new filters, and shall contain the latest version of I/M testing software. The BAR-97 shall contain a loaner unit procedure, to be available to manufacturer field service personnel, which will perform EIS functions as described in Appendix C-2. The BAR will review and approve the written alternative loaner unit procedure submitted by the EIS manufacturer that provides sufficient protection to maintain the integrity of electronic transmission. This alternative procedure should clearly illustrate the methods used to initialize and establish the *personality* of the loaner unit. The procedure should be capable of automatically retrieving *personality* information of the old unit from its disk drives and transfer that information to the loaner unit without manufacturer service technicians performing manual key entry.

4.4 DISCLOSURE STATEMENT

The manufacturer shall provide a disclosure statement, which is subject to BAR approval, to a BAR-97 purchaser prior to consummation of the sale, disclosing, as a minimum, the following items. The statement shall be signed by the purchaser and each item shall be initialed by the purchaser acknowledging the disclosure.

a) The cost of installing any BAR-required software update shall be the responsibility of the BAR-97 owner. The cost per software update is estimated to be $_____.

b) Any upgrade offered and installed by the BAR-97 manufacturer shall be covered by at least a one-year warranty.

c) The certification issued by the BAR for a BAR-97 indicates that the EIS system meets the requirements of the BAR-97 Specification and is therefore authorized to

perform required I/M inspections on vehicles. In no way does the certification make the BAR liable or responsible for any damage caused by the BAR-97.

d) Any change to the warranty or service contract must be approved by BAR.

e) If the manufacturer fails to provide the purchaser with a warranty and warranty description, and the purchaser files a written complaint with the BAR, the manufacturer shall refund to the purchaser the depreciated value of the BAR-97 based on straight line depreciation over 5 years.

4.5 SPARE PARTS

The BAR-97 manufacturer shall maintain an adequate supply of spare parts and accessories to fulfill the service requirements of the warranty or service contract. The manufacturer shall, at the time of delivery, supply the purchaser with four sets of filters, at least 500 sheets of paper, one extra printer cartridge and one extra set of calibration gas cylinders. Manufacturers are not required to deliver spare parts to stations if the station operator agrees to accept a voucher, good for the full price of the spare parts, provided when the BAR-97 is purchased.

4.6 SERVICE CENTERS

The EIS manufacturers shall provide or contract for warranty or service contract repairs within each region where analyzers are sold. The following are considered regional areas of California: (1) Northern California includes an area north of an essentially horizontal line drawn from the coast through Santa Rosa, Sacramento and South Lake Tahoe; (2) the Bay Area includes everything in a line from the coast east to Napa, south to Hayward and Hollister, and west to Monterey; (3) the San Joaquin Valley including everything between the Coast Range and the Sierra Nevada mountains and from Stockton south to Bakersfield; (4) the Santa Barbara-Ventura area; (5) the South Coast Air Basin which includes San Bernardino and Riverside on the east, and San Clemente on the south; and (6) the San Diego area including from Oceanside south to the Mexican border and east to Escondido and El Cajon. Shipping units by common carrier after repair or service is accomplished should only be done in cases where remanufacturing is required or where solving a problem requires research beyond the capabilities of field service personnel.

4.7 WORKMANSHIP

Each manufacturer, or his agent, shall guarantee the repairs made for a period of 90 days. The manufacturer shall ultimately be held responsible, regardless if an agent performed the repairs. Upon completion of any repairs to the EIS sample system, optical bench, O2 or NO sensors, the service technician must perform a full four-gas audit in accordance with section 2.4.5i of this specification. If the EIS fails this audit, the technician shall correct the problem. When the EIS passes the post repair audit, the technician must sign and transmit the full results of the passed audit to the local BAR field office. The preferred audit form may be found at the end of this section.

In addition, the EIS shall be repaired on the first visit and within 72 hours of the service request. If the EIS is not repairable in 72 hours, then a loaner shall be provided.

4.8 PARTS REMOVED

All parts removed from an EIS to accomplish repairs shall be accounted for and given to the owner when the EIS is returned to service, except for parts covered under warranty or the service contract. Parts which can be rebuilt and returned to service shall be listed on the completed work order.

4 4.9 CERTIFICATION TERM AND RENEWAL

Certification Terms: BAR-97 Certificates and Approvals shall expire *one year* from the date of issuance, unless otherwise stated. Certification/approval shall also expire if the approved company changes ownership.

Conditions of Certificate/Approval: If any problems or discrepancies occur subsequent to certification, the manufacturer shall correct or resolve the problem to the satisfaction of BAR and in a timeframe acceptable to BAR. The certification only applies to equipment meeting the current specification and only to the original configuration. BAR must approve all future updates and modifications. Non-compliance with a BAR required hardware or software update and / or non-compliance with any deferred items may result in a terminated certificate / approval.

To renew the BAR-97 Certificate, each manufacturer shall correct any identified problems including in-use performance failures. In addition, each manufacturer must submit the following, 90 days prior to the expiration of the existing BAR-97 Certificate:

- a description of any proposed or BAR approved changes to the EIS hardware and software
- a current company organization chart and phone list
- manufacturing quality control data
- when applicable, BAR specified software update in a fully functional condition along with data showing the required update meets the BAR-97 specification / software instruction, see *§* 3.2.3(d).

Once the above items are received and, when applicable, tested by BAR, the EIS manufacturers must demonstrate the software update, changes and/or corrections meet the BAR-97 Specification. This demonstration shall be conducted in *accordance with*

the requirements set forth in §5.12 of this specification. During beta testing, the EIS must meet or exceed the minimum in-use performance standards and operate continuously to BAR's satisfaction with no major defects. The beta sites shall be clustered in locations to allow auditors to visit multiple sites in one day. Upon completion of successful beta testing the software update, changes and or corrections shall be installed in all remaining EIS within 30 days. Once installed in all of the applicable EIS, the Certificate will be renewed. Note: Before installing in all EIS, the software update, changes and or corrections must meet BAR's approval.

BAR-97 Certificate Renewal Timelines

BAR-97 Certificate Valid for 12 months	Month 1	2	3	4	5	6	7	8	9	10	11	12	13
BAR Software Update										Submit software update 90 days before expiration.			
Certificate Renewal										Submit changes, QC data, org. chart 90 days before expiration			
BAR Review and Testing													
Beta Testing 30 days													
If applicable, install software in all EIS													

If the EIS manufacturer meets the renewal requirements, however, needs additional time to implement in all EIS, BAR may extend the existing certification until full implementation. BAR-97 certification will not be renewed if a manufacturer fail to meet the certification renewal requirements.

These terms and conditions are in addition to those specified in a conditional certificate and/or terms specified in other parts of the BAR-97 specification.

4.10 IN-USE PERFORMANCE

As part of the Smog Check Quality Assurance program, BAR auditors conduct four-gas accuracy audits of the EIS analyzers. These audits are conducted on an on-going basis and are used to evaluate the individual and overall accuracy of the EIS analyzers.

To ensure uniform and accurate audits, each auditor follows standardized audit procedures. These procedures include the use of an automated gas audit program to collect data and determine individual EIS pass/fail results. In addition, the standardized procedures include processes (comprehensive visual inspection and leak check) to evaluate the condition of each EIS analyzers before an actual gas audit is conducted. See Section 2.4.5 i of this specification for audit details.

Individual analyzers must meet the minimum gas audit accuracy standards specified in Section 2.

The cumulative results of the first gas audit (only conducted on EIS in the "as is" condition found by the auditor…no repairs allowed before audit) are used to assess the overall in-use performance of each manufacturer's EIS fleet. The gas audit shall be completed after each EIS passes the leak check and visual inspection. Each EIS manufacturer shall ensure that their EIS fleet meets the in-use performance standards described in the table below. In the event of an in-use performance failure, the EIS manufacturer shall correct the failure in a time frame specified by BAR and in a manner satisfactory to BAR. Failure to correct within the BAR specified time-frame or in a manner satisfactory to BAR will result in punitive actions, including but not limited to those set forth in the California Code of Regulations and Section 44036 of the Health and Safety Code.

Note: Meeting the in-use performance standards does not negate any other requirement of the BAR-97 specification or preclude the EIS manufacturers from meeting any other BAR-97 specification.

Performance Measure	Performance Standard
Gas Audit Accuracy (Per EIS manufacturer fleet)	• As of April 30, 2000 90% of the BAR-97 or newer shall be within specification for all gas ranges.

Gas Ranges of Interest

Gases (HC, CO, NO and CO_2) are audited at four ranges: low, mid-1, mid-2 and high. Pass/fail determinations are made for each range within each gas and a failure at any

point results in an overall unit failure. Table 2 shows the audit gas concentrations for the BAR-97.

Table 2 – Audit Gas Concentrations

Range	HC (ppm) hexane	CO (%)	NO (ppm)	CO_2 (%)
Low	100	0.50	300	6.00
Mid-1	480	2.40	900	3.60
Mid-2	960	4.80	1800	7.20
High	1600	8.00	3000	12.00

Gas ranges of interest are the specific pollutant levels where almost all pass/fail decisions are made during the Smog Check inspection. For example, 90% of the vehicles tested during the first week of September 2001 had a pass/fail determination point for HC falling between 33.9 ppm and 148.1 ppm as shown in Table 3, see report titled "BAR-97 Emissions Inspection System Gas Audit Evaluation". Based on this analysis, the audit gas concentrations pertinent to pass/fail decisions are indicated in Table 4 below.

Table 3 – Point Pass/Fail Decisions Made

Percentile	HC (ppm) hexane	CO (%)	NO (ppm)
5th Percentile	33.9	0.47	741.7
95th Percentile	148.1	1.16	1883.3

Table 4 – Audit Gas Concentrations Pertinent to Pass/Fail Decisions

Range	HC (ppm)	CO (%)	NO (ppm)	CO_2 (%)
Low	**⇒100**	**⇒0.50**	300	**⇒6.00**
Mid-1	**⇒480**	**⇒2.40**	**⇒900**	**⇒3.60**
Mid-2	960	4.8	**⇒1800**	**⇒7.20**
High	1600	8.0	3000	**⇒12.00**

Note: ⇒ = Gas ranges of interest. In addition, all CO_2 ranges are important since CO_2 is used in the dilution correction factor (DCF) calculation. An erroneous DCF could result in an erroneous pass/fail decision.

4.11 PERIODIC BAR TESTING

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To ensure EIS units remain in a certified configuration BAR may select in-use EIS units for evaluation and testing at BAR. In this case, the corresponding EIS manufacturer shall provide a loaner unit to the Smog Check station during the evaluation period.

4.12 USER FRIENDLY

BAR-97 hardware and software shall be user friendly. A user friendly EIS shall not add any unnecessary additional time or cost to the smog check procedure. Software menus, entry prompts, and sequence of events shall be optimized to prevent unnecessary additional time. The smog technician must easily understand, operate, and calibrate the EIS and all required EIS auxiliary devices.

4.13 LOCKUP RATE

Upon this specification release date, all EIS certified to this specification shall not lock up more than 5% of the time (based on a BAR Engineering survey of 120 BAR-97 addendum 7 beta stations to determine an acceptable industry standard lock up rate). A lock up shall be defined as an event during an inspection where the EIS will freeze, preventing completion of the inspection; causing the operator to reset or reboot the EIS, restart the inspection, and inconveniencing the technician and consumer. A lock up may be caused by defective hardware or software. An EIS or auxiliary device is considered defective if it locks up frequently due to defective hardware or software. BAR reserves the right to conduct periodic surveys to verify compliance or other method proposed by manufacturer and approved by BAR.

4.14 BASIC AND CHANGE OF OWNERSHIP AREA EQUIPMENT

EIS manufacturers may sell BAR-97 systems without NO measurement capability and without a dynamometer to stations performing only Two-Speed-Idle (TSI) tests. The analyzer shall be identical to the Enhanced area EIS with the exception of a NO measurement device that is not installed or is disabled in software.